

REMARKS/ARGUMENTS

The Applicants have carefully considered this application in connection with the Examiner's Action and respectfully request reconsideration of this application in view of the foregoing amendment and the following remarks.

The Applicants originally submitted Claims 1-21 in the application. Previously, the Applicants amended Claims 2-5, 7-10 and 12-21 and canceled Claims 1, 6 and 11. Presently, the Applicants have amended Claims 20 and 21, but have not amended, canceled or added any other claims. Accordingly, Claims 2-5, 7-8 and 19-21 are currently pending in the application.

I. Formal Matters and Objections

The Examiner has objected to the claims, specifically Claims 20 and 21 as containing informalities; namely various typographical or grammatical errors. In response, the Applicants have amended these claims to correct these inadvertent errors and appreciate the Examiner's diligence in finding and bringing these errors to their attention.

II. Rejection of Claims 2-3 under 35 U.S.C. §102

The Examiner has rejected Claims 2-3 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 6,204,105 to Jung ("Jung"). Independent Claim 2 currently includes the element of a capacitor located on a recrystallized polysilicon layer located over a gate electrode layer. Jung fails to disclose this element. The Examiner actually concedes that Jung fails to disclose this element, but the Examiner discounts the phrase recrystallized polysilicon layer as being a product by process

limitation. Accordingly, the Examiner asserts that any polysilicon layer would suffice under this product by process reading.

However, the Examiner's own cases state that "it is the patentability of the final product per se which must be determined in a "product by process" claim and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in "product by process" claims or not. *See, In re Marosi et al.*, 218 USPQ 289. The Examiner also indicates that it is the applicants' burden to prove otherwise.

The Applicants disagree with the Examiner that a recrystallized polysilicon layer is not physically different from an as-deposited polysilicon layer. Polysilicon is made up of small single-crystal domains called *grain* whose orientations and/or alignment vary with respect to each other. The roughness often observed on polysilicon surfaces is due to the granular nature of polysilicon. The microstructure of the as-deposited polysilicon is a function of the deposition conditions. For typical LPCVD processes (e.g., 100% SiH₄ source gas, 200 mtorr deposition pressure), the amorphous-to-polycrystalline transition temperature is about 570°C, with amorphous films deposited below this temperature (Figure 15.1) and polycrystalline films above this temperature (Figure 15.2). As the deposition temperature increases significantly above 570°C, the grain structure of the as-deposited polysilicon films changes in dramatic fashion. For example, at 600°C, the grains are very fine and equiaxed, while at 625°C, the grains are larger and have a columnar structure that is aligned perpendicular to the plane of the substrate. In general, the grain size tends to increase with film thickness across the entire range of deposition temperatures. As with grain size, the crystalline orientation of the polysilicon grains is dependent on the deposition temperature. For example, under standard LPCVD conditions (100% SiH₄, 200 mtorr), the crystal orientation of polysilicon is

predominantly (110) for substrate temperatures between 600 and 650°C. In contrast, the (100) orientation is dominant for substrate temperatures between 650 and 700°C.

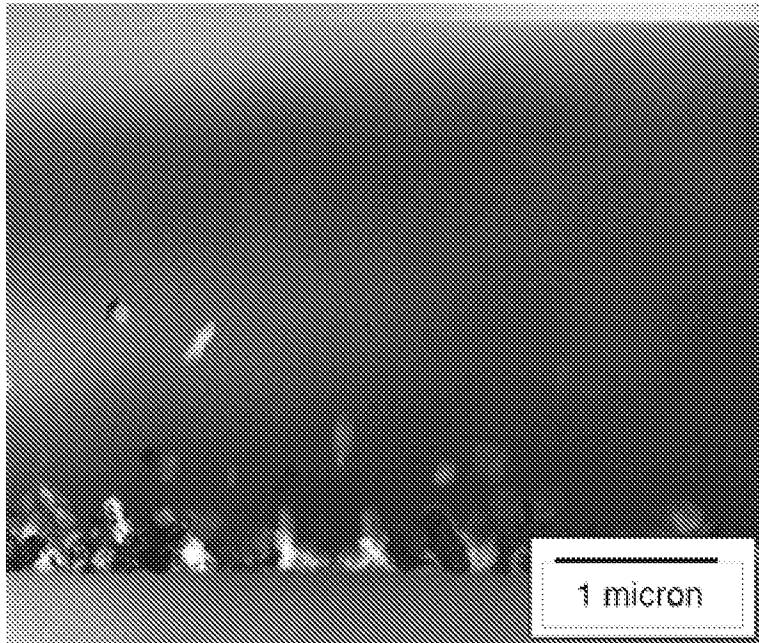


FIGURE 15.1

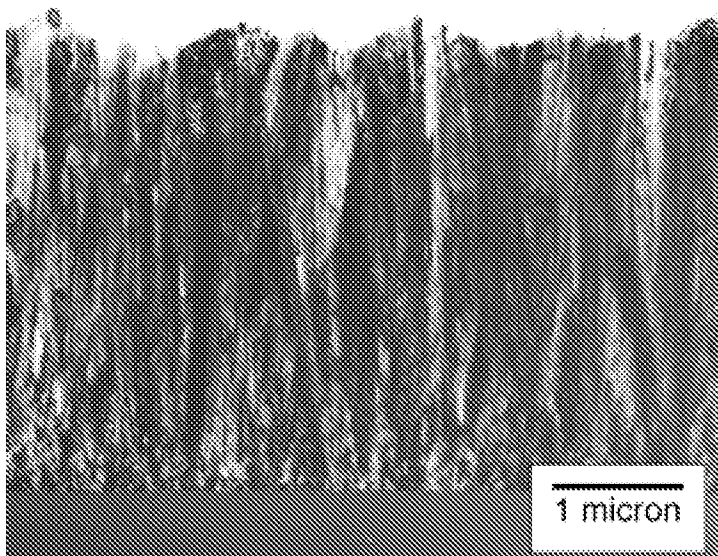


FIGURE 15.2

Accordingly, while the amorphous polysilicon is recrystallized into the recrystallized polysilicon, it still does not have as much of surface roughness as the as-deposited polysilicon, which is in accordance with the as-filed specification. Therefore, recrystallized polysilicon and standard polysilicon are not physically identical, and thus the examiner's product by process argument is erroneous.

Therefore, Jung does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claim 3 is dependent upon Claim 2, Jung also cannot be an anticipating reference for Claim 3. Accordingly, the Applicants respectfully request the Examiner to withdraw the §102 rejection with respect to these Claims.

III. Rejection of Claims 7, 8 and 19-21 under 35 U.S.C. §102

The Examiner has rejected Claims 7, 8 and 19-21 under 35 U.S.C. §102(b) as being anticipated by U.S. Patent Publication No. 20040129963 to Amo *et al.* ("Amo"). Independent Claims 7 and 19, in one form or another, currently includes the element of a capacitor located on a recrystallized polysilicon layer. Amo fails to disclose this element. The Examiner again argues that a polysilicon layer and a recrystallized polysilicon layer, for the purposes of his/her analysis, are the same. As established directly above, this is not true.

Therefore, Amo does not disclose each and every element of the claimed invention and as such, is not an anticipating reference. Because Claims 8 and 20-21 are dependent upon Claims 7 and 19, Amo also cannot be an anticipating reference for Claims 8 and 20-21. Accordingly, the Applicants respectfully request the Examiner to withdraw the §102 rejection with respect to these Claims.

IV. Conclusion

In view of the foregoing amendment and remarks, the Applicants now see all of the Claims currently pending in this application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 2-5, 7-8 and 19-21.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 12-2252.

Respectfully submitted,

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